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**ASYMMETRIC AIR WARFARE THWARTS GROUND
MANEUVER:
A CONCEPT PROVEN AGAIN**

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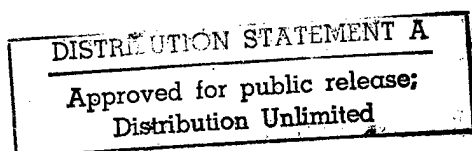


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13. ABSTRACT (Maximum 200 words) This report examines the widely differing assessments of the Operation DESERT STORM "Battle of Khafji." Limited assessments of its scope and importance define the battle by looking only at the ground action occurring in the town of Khafji, while more comprehensive assessments include the large amount of air interdiction stopping follow-on reinforcements from ever reaching the town. Air surveillance, command and control, and strike assets centrally controlled by the Joint Force Air Component Commander allowed the coalition to detect, target and stop those follow-on forces. This asymmetric air attack of follow-on forces is why the scope of action was small.				
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An unpublished CENTCOM paper states that, "Perhaps no action of the Gulf War has been so misunderstood as the series of engagements that occurred in Southern Kuwait and Northern Saudi Arabia from 29 Jan-2 Feb 1991."¹ The "Battle of Khafji," as this action is now known, may certainly be misunderstood, particularly with respect to its size and importance. Some accounts regard it as a minor battle, while others claim it was a major turning point in the war. Unfortunately, the ones who unquestionably know the truth -- the Iraqis -- have yet to clearly inform the world what their plans and intentions were, and explain the outcome and results. Therefore, we must attempt to piece together the story from numerous and sometimes conflicting sources.

For example, an early official US Army historical report describes the "Battle of Khafji" as a division-level reconnaissance-in-force. This report suggests that Saddam ordered this reconnaissance because he had been blinded and battered by air operations and possibly deceived by elaborate deception operations carried out by the XVIII Airborne Corps to mask their move west. This report surmised that Khafji was only a spoiling attack, meant to preempt Coalition ground action and inflict casualties before withdrawing.² In contrast, author and retired Marine Corps Lt Gen Bernard Trainor characterized Khafji as an effort to start a major ground battle in his unofficial account of the Gulf War. He believed Iraq attacked because it had been taking a one-sided pounding from the air campaign for two weeks. Trainor reported that Saddam was convinced the American public would not support the war if the Americans took large numbers of casualties on the battlefield, and if the Americans would not come north to fight, then he had to send his army south to attack. This attack was intended to humiliate the Saudis and inflict casualties on the Americans coming to their aid. Once the ground action began, the Iraqis could then withdraw behind their defenses, drawing the Coalition after them and grind them down in a bloody stalemate.³ The Gulf War Airpower Survey lends credence to this version and adds that Khafji was meant to heighten the morale of the Iraqis by taking the offensive, and to secure prisoners as a source of intelligence in order to better determine the Coalition's intentions.⁴

While Iraqi Foreign Minister Tariq Aziz flatly denied the attack was made to secure prisoners, he too explained that Khafji was supposed to start something much bigger and explained that, "... the purpose was to have a direct contact with the other side on the ground. We were waiting for them to come but they came late when they inflicted on us a lot of casualties and especially in the civilian area, so it was an attack an offensive in which we tried to make what you call in Arabic -- a touch you see between the two armies, but they avoided that." He confirmed the intent was to inflict casualties and erode American support as in the Vietnam conflict. He further explained that President Bush

¹ The Battle Of Khafji. Lessons Learned, USCENTCOM, CCJ1, May 1996, p. i.

² Robert H. Scales, Jr., Brigadier General, USA, Certain Victory, Office of the Chief Of Staff, United States Army, Washington, DC, 1993, p. 190.

³ Michael T. Gordon and Bernard E. Trainor, Lt General (Ret), USMC, The General's War, Little & Brown, Boston, 1995, pp. 268-269.

⁴ Cohen, Eliot A., et al, Gulf War Air Power Survey (GWAPS), Volume II, US Government Printing Office, Washington DC, 1993, p. 234.

promised the American people that Operation Desert Storm would not be another high-casualty operation like Vietnam, and "he kept that promise, very efficiently, by limiting the war, mainly to airplanes and missiles." In fact, Aziz categorizes the whole of Operation Desert Storm as an "air attack." He even discredits the 100 hour ground phase because of the air attack preparations. He concludes that, "It was not a conventional war you see between two armies."⁵

Saddam believed that thousands of casualties delivered home would erode American public support, just as it did during the Vietnam conflict. He also believed that the United States relied on its Air Force, but that bloody ground action would be the ultimate determinant of any war with Iraq. Saddam further boasted American society could not accept 10,000 dead in one battle, but that Iraq surely could.⁶ General H. Norman Schwarzkopf explained that during the Iran-Iraq war Saddam's strategy was to absorb Iranian attacks. General Schwarzkopf explained, "He would sit there and take the pounding and take the pounding and continue to fall back on successive positions, willing to sustain large numbers of casualties in his front-line troops, until such time as the offensive was halted." This would lure the Iranians into a trap where they would be stalled by dug-in defenses and hammered by mobile forces attacking from the flanks.⁷

The Iraqis, and the world in general, did not expect the unprecedented extended aerial attacks executed by the coalition past the first week of the air campaign. Soviet Marshall Sergi Akhromeyev explained that "according to classical theory and exercise practice in recent years, five to seven days are allotted to independent air actions" in a combined-arms operation.⁸ On January 23rd, Pentagon leaders confirmed Saddam's suspicion that the ground war he needed was not imminent. Secretary Cheney and General Powell explained air supremacy had been achieved, and the United States was in "no hurry" to stop pounding the Iraqis. They even hinted that it might not even be necessary to resort to ground fighting.⁹ Another report told how Iraqi ground commanders said the allies were showing "cowardice and fear" by avoiding ground combat and instead waging war from the air.¹⁰ Interestingly, an article printed early on the morning of the 29th of January proclaimed, "Big strike by Saddam expected soon." An unnamed Pentagon source was quoted as saying, "Only an idiot would sit there forever while his military was being destroyed," and, "He'll soon be at the point where it's

⁵ www.pbs.org/wbgh/pages/frontline/gulf/oral/aziz/3.html

⁶ Murray Williamson, Air War in the Persian Gulf, Nautical & Aviation Publishing, Baltimore, 1994, p. 58.

⁷ William Neikirk, Chicago Tribune, "Baghdad's strategy: Take the Punches," January 27, 1991, p. 15.

⁸ Benjamin S. Lambeth, Operation DESERT STORM and its Meaning. The View from Moscow, The RAND Corporation, Santa Monica, 1992, p.48.

⁹ Baltimore Sun, "Ground War Only if Necessary," January 24, 1991, p. 10.

¹⁰ New York Times, "Allies Aided By Weather, Intensify Bombing Of Iraq; Hussein Restates Defiance," January 25, 1991, p. 1.

use it or lose it."¹¹ Later that evening, Saddam's efforts nearly fulfilled the prophecy in that headline.

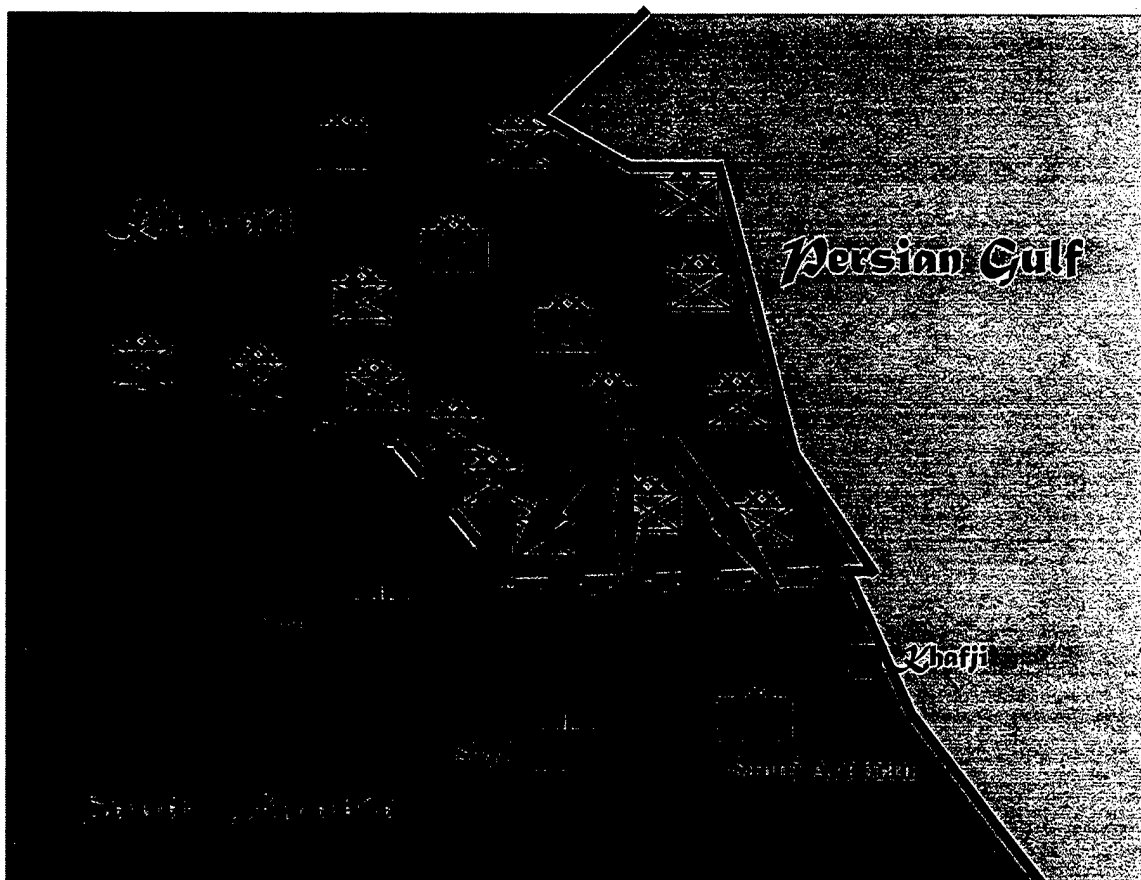


Figure 1. Khafji Battleground

Late on the evening of January 29th, 1991, Saddam's forces crossed from occupied Kuwait into Saudi Arabia at three locations. United States Marine Corps (USMC) Light Armor Infantry (LAI) forces with close air support repulsed the Iraqi attacks at Al Wafra and Umm Hujul. The Saudi border town of Khafji had been virtually abandoned because it was within range of Iraqi artillery deployed in Kuwait. Therefore, Iraqi forces made it into Khafji with little ground opposition.¹² However, this does not mean the Iraqi advance was not without cost. The unpublished CENTCOM paper states that only part of three battalions eventually attacking Khafji survived the air power gauntlet to make it into town. Indeed the surviving equipment of those three battalions amounted to little more than a single battalion's worth. The paper goes on to say there were "frightening false alarms within the coalition forces due to erroneous intelligence reports." A purportedly erroneous report of a 15 mile column of armor reinforcements headed to Khafji is cited as an example. Although the paper explained the consequences

¹¹ John King, *Washington Times*, "Big strike by Saddam expected soon," January 29, 1991, p. B8.

¹² H. Norman Schwarzkopf, General (Ret), USA with Peter Petre, *It Doesn't Take A Hero*, Linda Grey Bantam Books, New York, 1992, p. 424.

of such a column would have been grave indeed, the paper then surmised the armor column report was erroneous because the column never appeared at Khafji.¹³

The CENTCOM paper decided the reports were erroneous because those columns never materialized in front of coalition forces on the ground. However, other reports indicate air power engaged and destroyed or stopped these reinforcements and others long before they could reach Khafji. The Gulf War Air Power Survey states that over the course of the battle, reinforcements were stopped and turned back both at the border and inside of Kuwait.¹⁴ In fact, even newspapers reported that enemy armored columns were repeatedly attacked by coalition air power. Colonel Dick White, USMC, who commanded a squadron of Harriers, was reported to have observed and attacked 800 to 1000 Iraqi military vehicles moving south towards Saudi Arabia.¹⁵ During a battlefield interview, Saudi Arabian General Khaled bin Sultan talked about various Iraqi units involved and emphasized that coalition air interdiction stopped the main attack.¹⁶ He later described how air power hammered two follow-on Iraqi divisions which were discovered assembling during the night inside of Kuwait.¹⁷

Newspaper accounts also present various views on the size and importance of the battle. One account describes an attack of only 40 to 45 Iraqi tanks and 400 to 600 troops.¹⁸ Another account talks about five or six divisions with 60,000 troops massing and a coalition air attack against a 10-mile armored column.¹⁹ The vast differences in these written accounts of the size, and therefore the importance, of the battle might be explained by differences in perspective or the definition of what troops were counted. For example, the former account refers only to the forces which did enter Khafji, while the latter report refers to all forces poised to support the attack. A strict ground-centered definition might only count those enemy ground forces actually engaged by friendly ground forces, severely limiting the size of the forces acknowledged as attacking Khafji. Surely, General Schwarzkopf was in a position to access all the available information about Khafji, but he would later write "... to attack Saudi Arabia with a single division defied military logic."²⁰

¹³ The Battle Of Khafji, Lessons Learned, pp. 4, 7, and 9.

¹⁴ Cohen, Vol. II, p. 240.

¹⁵ R. W. Apple, Jr., New York Times, "A Bigger Assault is Seen as 60,000 Iraqis Mass Near Kuwaiti Town," February 1, 1991, p. 1.

¹⁶ Khaled bin Sultan, HRH General, Saudi Arabian, pool footage interview, Khafji, Saudi Arabia, January 31, 1991.

¹⁷ Khaled bin Sultan, HRH General, with Patrick Seale, Desert Warrior, HarperCollins Publisher, New York, 1993, p. 375.

¹⁸ Caryle Murphy and Guy Gugliotta, Washington Post, "Saudi Town Reclaimed; Trapped Marines Freed," February 1, 1991, p. 1.

¹⁹ R. W. Apple, Jr., New York Times, "A Bigger Assault is Seen as 60,000 Iraqis Mass Near Kuwaiti Town," February 1, 1991, p. 1.

²⁰ Schwarzkopf, p. 424.

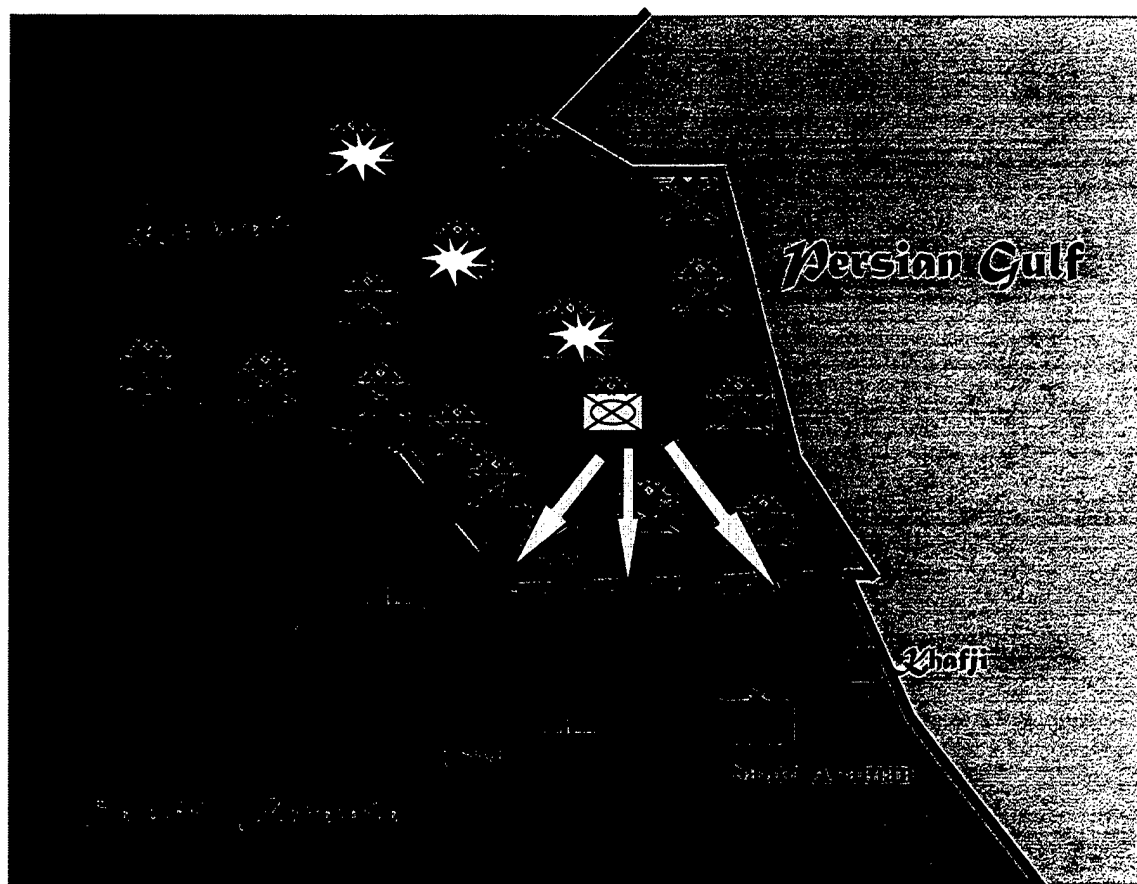


Figure 2. Air Interdiction of Follow-on Reinforcements

In contrast, a more overarching definition that counted all enemy forces that attempted to maneuver in support of this attack would certainly expand the size and importance of the battle. Secretary Cheney's final report encompasses those deep Iraqi forces stopped by air power that may well have been able to spark the ground war Saddam so desperately needed, had they been allowed to engage on the ground.²¹ General Chuck Horner, the Joint Forces Air Component Commander, explained that, "so few Iraqis actually made it across the border it appeared like some sort of minor action," and at the Coalition staff was so engrossed in preparations and re-deployments for the so called "Hail Mary" operation, that they didn't have time to study the battle at Khafji.²² Indeed, activities preparing for the Coalition's ground offensive were a top priority. In fact, Army officials reported that about half the US 3rd Armored Division's troops and over two thirds of its attack helicopters and heavy armor were not ready for combat when the Iraqis attacked Khafji.²³

²¹ Richard Cheney, Conduct of the Persian Gulf War, Government Printing Office, Washington DC, 1992, pp. 130-133 and 510-512.

²² Charles A. Horner, General (Ret), USAF, Interview with Maj D. Clevenger, The Pentagon, February 26, 1991.

²³ Molly Moore, Washington Post, "U.S. Jets Hit Iraqi Tank convoy In Sight of Kuwaiti-Saudi Border," January 30, 1991, p. 1.

The fact that much of the coalition's ground power was repositioning to the west for the ultimate "Hail Mary" offensive, and in some cases still disembarking from ships in port, made air power absolutely critical to the coalition. General Schwarzkopf wanted them to get as much air power up there as they possibly could to handle that situation.²⁴ Major General Thomas Olsen, the Central Command Air Forces Deputy Commander, explained General Schwarzkopf wanted it stopped with available in-place ground forces and to use air power as the key element to stop those forces. Repositioning or re-deploying any additional ground forces would have disrupted plans and movements west for the "Hail Mary" operation.²⁵

The Coalition's vast advantage in battlefield information played a critical role, during the Battle of Khafji.²⁶ The Joint Surveillance Target Attack Radar System (JSTARS) provided a heretofore unavailable real-time deep look into enemy territory. JSTARS, through responsive airborne command and control, directed strike assets with deadly results. For example, strike aircraft destroyed 58 of 61 vehicles in an Iraqi convoy detected by JSTARS heading south from Kuwait City on January 29th.²⁷ Real-time wide area JSTARS surveillance gives any Joint Force Commander a tremendous advantage. This battlefield information provides a superior situational awareness to make the best possible decisions to integrate all available forces.²⁸ Thus the coalition was able to stop Iraqi follow-on reinforcements deep inside of Kuwait with air power. Therefore, the vast majority of Iraqi ground forces were stopped before they could even come within range of the coalition's ground forces.

The actual results of the synergism resulting from real-time wide area JSTARS information, airborne command and control, and strike aircraft were devastating to the Iraqis. Unfortunately, the enormity of this achievement was not fully recognized, especially since most of the air interdiction occurred at night. At least in part the results appear to be obscured by the low tallies of destroyed vehicles commonly published in open sources. One preliminary account reports 22 tanks destroyed in the western battles in addition to 17 tanks and armored vehicles in Khafji.²⁹ The unpublished CENTCOM paper reports 81 destroyed vehicles counted in Khafji.³⁰ One of the higher numbers reported is 300 vehicles being destroyed.³¹ Since just one Iraqi mechanized or armor

²⁴ www.pbs.org/wbgh/pages/frontline/gulf/oral/schwarzkopf/4.html

²⁵ Thomas R. Olsen, Major General (Ret), USAF, Interview with Maj D. Clevenger, The Pentagon, May 13, 1991.

²⁶ Horner interview.

²⁷ Glenn W. Goodman, Armed Forces Journal, International, "Getting the Whole Picture; Enemy Forces Can't Hide From The Joint STARS Radar," Armed Forces Journal International, Inc., Washington DC, October, 1995, p.52-55.

²⁸ Price T. Bingham, Lt Col (Ret), USAF, Armed Forces Journal, International, "Awake, Aware, And Alert; MTI Radar Surveillance Can Revolutionize Peacekeeping, Crisis Management, And Warfighting," Armed Forces Journal International, Inc., Washington DC, October, 1995, p. 56-57.

²⁹ Murphy, p. 1.

³⁰ The Battle Of Khafji, Lessons Learned, p. 8.

³¹ Gordon, p. 287.

division has up to 2600 vehicles,³² even 300 destroyed vehicles does not seem like enough losses to stop a multi-division operation. However, a tally of 300 destroyed vehicles is probably not accurate either. Bomb Damage Assessment (BDA) was a hotly contested issue during the Gulf War, with various intelligence agencies producing conflicting tallies, and perhaps no other category of targets was as highly disputed as the armor category. General Schwarzkopf explained that it was more difficult to tell if a tank was destroyed than it was to tell if a strategic target had been hit.³³

Although the tallies may be disputed, the Iraqi's subsequent actions clearly reveal the impact. They attempted no other offensive action. Indeed, they took many actions just to survive the continuing air attacks. The Iraqis constructed more berms, dug deeper, dispersed, used smaller convoys, moved headquarters frequently, and used more decoys.³⁴ Perhaps even more important than the number of vehicles lost, is the fact that movement was impossible --any attempt to move was discovered by the coalition and engaged with air power. Indeed, General Schwarzkopf relied on air power's ability to stop moving armor when planning the coalition scheme of maneuver.³⁵ The Iraqis learned the hard way that to move forces, meant destruction from the air. On the other hand, staying in place also meant being the brunt of air attack; a lose-lose situation.

The inability to move ground forces against an enemy with air superiority is not a new phenomenon. Air power provides the "best means for suddenly concentrating potentially decisive firepower anywhere on the battlefield," and so provides a vital interdiction capability.³⁶ The Germans learned in WWII that it was not possible to move ground forces in daytime. Night and other low visibility conditions were considered the ideal time for action.³⁷ As planned, night and low visibility weather during their Ardennes offensive permitted nearly free movement for the Germans -- until the weather cleared.³⁸ The allies did have some limited capability to attack movement at night with aircraft by lighting the area with flares.³⁹ This sanctuary existed because pilots relied primarily upon the human eye for detection and engagement.

³² The Iraqi Army: Organization and Tactics, US Army National Training Center, January 1991, pp. 1-138, and Heavy Opposing Force Operational Guide, US TRADOC, Threat Support Division, Fort Leavenworth, KS, undated.

³³ Schwarzkopf, pp. 431-432.

³⁴ Cohen, Vol. II, p. 240.

³⁵ Schwarzkopf, p. 383.

³⁶ Heavy Opposing Force (OPFOR) Operational Art Handbook, U.S. Army Training and Doctrine Command, Deputy Chief of Staff for Intelligence (DCSINT), Fort Monroe, VA, September 1994, p. 10-7.

³⁷ Night Combat, Department of the Army Pamphlet No. 20-236, Department of the Army, June 1953, p. 1.

³⁸ Danny S. Parker, To Win The Winter Sky: Air War over the Ardennes, 1944-1945, Combined Books, Pennsylvania, 1994, p. 208.

³⁹ B. H. Liddell Hart, The Rommel Papers, Hardcourt, Brace and Company, New York, 1953, p. 286 and Samuel W. Mitcham, The Desert Fox in Normandy: Rommel's Defense of Fortress Europe, Praeger Publishers, CT, 1997, p. 96.

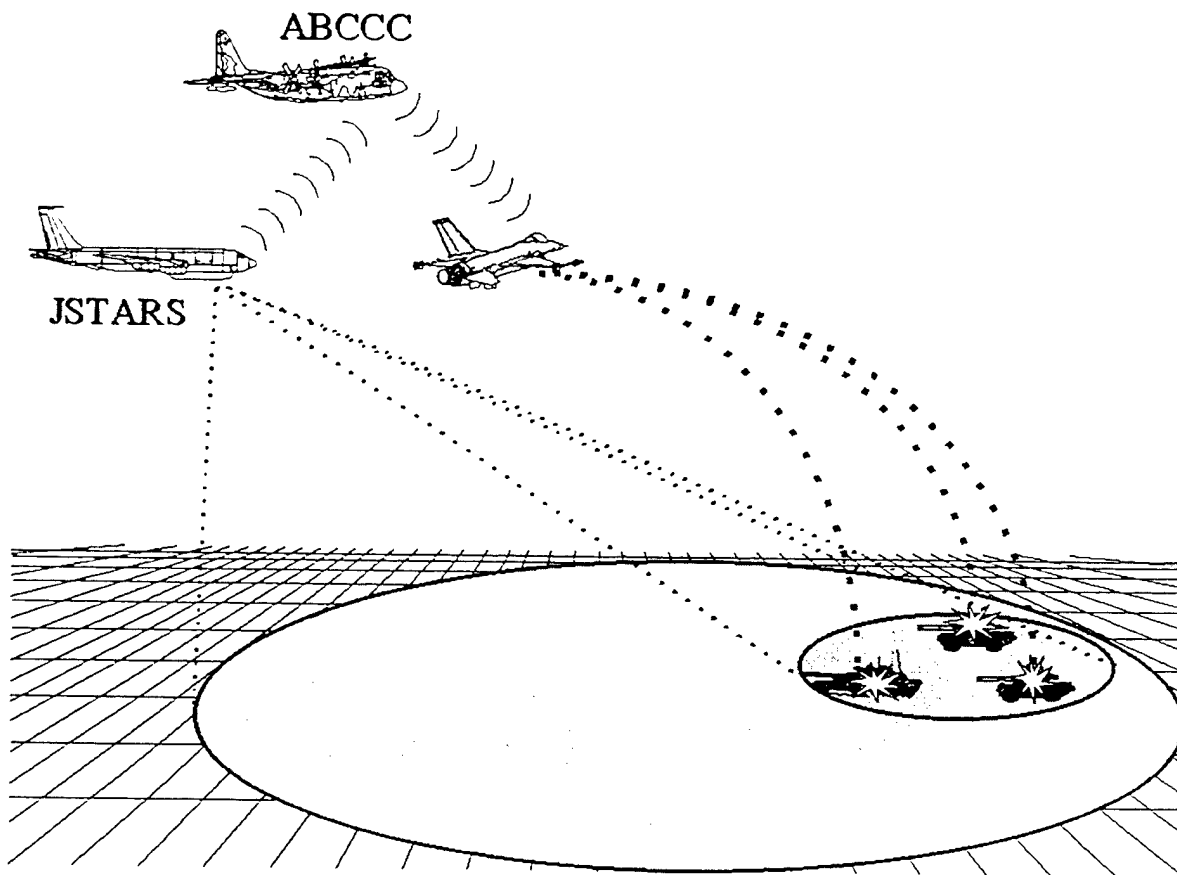


Figure 3. Battlefield Surveillance, C2, and Precision Strike

However, several innovations converged to improve upon the human eye's capability and remove the heretofore sanctuary of night/low visibility conditions. One is the all-weather day and night wide-area surveillance capability provided by JSTARS in the Gulf War. Another is the advanced navigation and targeting sensors on today's aircraft, such as the Low Altitude Navigation and Targeting InfraRed for Night (LANTIRN) systems. One more innovation is the precision weapons aircraft now employ, such as the AGM-65 Maverick missile and Laser Guided Bombs. Coupled with flexible command and control and the freedom of action guaranteed through air superiority, these three innovations facilitate deep detection, targeting and engagement.

The impact of air interdiction has long been recognized as vital to any campaign. General Omar N. Bradley noted air interdiction's capability to effectively stop daylight movement of ground forces and their supplies.⁴⁰ Current joint doctrine also emphasizes

⁴⁰ Omar N. Bradley, Effect Of Air Power On Military Operations, Western Europe, United States Strategic Bombing Survey and Air Effects Committee, 12th Army Group, Wiesbaden, Germany, 1945, pp. 1.80-81, 162-181.

the value of air interdiction.⁴¹ Deep air interdiction of moving enemy forces is a very powerful tool for the Joint Force Commander (JFC) when coupled to the recent innovations in detection and targeting and flexible command and control systems. The air interdiction mission becomes even more effective when all assets are centralized under one commander. A Joint Forces Air Component Commander (JFACC) using JSTARS and Airborne Command, Control and Communications assets, is able to redirect strike aircraft instantly from other assigned missions to stop the enemy ground movements presenting the greatest threat.



Figure 4. Armored Unit Destroyed on a Road

An adversary facing this capability to detect and target moving enemy forces in real time is severely restrained and will find it virtually impossible to apply recognized principles of war such as surprise, maneuver, mass, security and objective.⁴² Indeed, this capability transforms concentration into a vulnerability.⁴³ A recent study concluded that a

⁴¹ Test Pub, Joint Pub 3-03, Doctrine For Joint Interdiction Operations, Joint Chiefs of Staff, Washington DC, 1990, p. II-1 and Joint Pub 3-0, Doctrine For Joint Operations, p. IV-11 and Joint Pub 1, Joint Warfare of the Armed Forces of the United States, p. IV-10.

⁴² FM 100-1, The Army, Headquarters, Department of the Army, Washington DC, 1994, p. 31 and T. N. Dupuy, Colonel (Ret), USA, Understanding War: History and Theory of Combat, Paragon House Publishers, New York, New York, 1987, p. 17.

⁴³ Field Manual 100-5, Operations, Headquarters, Department of the Army, Washington DC, 1993, p. 7-2.

perceived defeat or stalemate on the battlefield is required for enemy concessions.⁴⁴ The Battle of Khafji demonstrated one powerful tool to stalemate or defeat an enemy -- centrally controlled surveillance, flexible command and control, and all weather day/night precision engagement of moving enemy ground forces.

⁴⁴ Stephen T. Hosmer, Psychological Effects of U.S. Air Operations in Four Wars, 1941-1991: Lessons For Commanders, RAND, Santa Monica, CA, 1996, p. xxi.

Acronyms

ABCCC	Airborne Command, Control and Communications
BDA	Bomb Damage Assessment
CENTCOM	US Central Command
JFACC	Joint Force Air Component Commander
JFC	Joint Force Commander
JSTARS	Joint Surveillance Target Attack Radar System
LAI	Light Armor Infantry
LANTIRN	Low Altitude Navigation and Targeting Infrared for Night
USA	United States Army
USMC	United States Marine Corps

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Bibliography

Apple, R. W., Jr., New York Times, "A Bigger Assault is Seen as 60,000 Iraqis Mass Near Kuwaiti Town," February 1, 1991.

FM 100-1, The Army, Headquarters, Department of the Army, Washington DC, 1994.

Baltimore Sun, "Ground War Only if Necessary," January 24, 1991.

Battle of Khafji. Lessons Learned, USCENTCOM CCJ1, May 1996.

Bingham, Price T., Lt Col (Ret), USAF, Armed Forces Journal, International, "Awake, Aware, And Alert; MTI Radar Surveillance Can Revolutionize Peacekeeping, Crisis Management, And Warfighting," Armed Forces Journal International, Inc., Washington DC, October 1995.

Bradley, Omar N., Effect Of Air Power On Military Operations, Western Europe, United States Strategic Bombing Survey and Air Effects Committee, 12th Army Group, Wiesbaden, Germany, 1945.

Cheney, Richard, Conduct of the Persian Gulf War, Government Printing Office, Washington DC, 1992.

Cohen, Eliot, A., et al, Gulf War Air Power Survey (GWAPS), Volume II, US Government Printing Office, Washington DC, 1993.

Dupuy, Trevor N., Col (Ret), USA, Understanding War: History and Theory of Combat, Paragon House Publishers, New York, 1987.

Goodman, Glenn W., Armed Forces Journal, International, "Getting the Whole Picture; Enemy Forces Can't Hide From the Joint STARS Radar," Armed Forces Journal International, Inc., Washington DC, October, 1995.

Gordon, Michael T. and Trainor, Bernard E., Lt Gen (Ret) USMC, The General's War, Little & Brown, Boston, 1995.

Hart, B. H. Liddell, The Rommel Papers, Hardcourt, Brace and Company, New York, 1953.

Heavy Opposing Force (OPFOR) Operational Art Handbook, U.S. Army Training and Doctrine Command, Deputy Chief of Staff for Intelligence (DSCINT), Fort Monroe VA, September 1994.

Horner, Charles A., Gen (Ret) USAF, Interview with Maj D. Clevenger, The Pentagon, Washington DC, February 26, 1991.

Hosmer, Stephen T., Psychological Effects of U.S. Air Operations in Four Wars, 1941-1991; Lessons For Commanders, RAND, Santa Monica, CA, 1996.

The Iraqi Army: Organization and Tactics, US Army National Training Center, January, 1991.

Test Pub, Joint Pub 3-03, Doctrine For Joint Interdiction Operations, Joint Chiefs of Staff, Washington DC, 1990.

Joint Pub 3-0, Doctrine For Joint Operations, Joint Chiefs of Staff, Washington DC, 1995.

Joint Pub 1, Joint Warfare of the Armed Forces of the United States, Joint Chiefs of Staff, Washington DC, 1995

King, John, Washington Times, "Big Strike by Saddam Expected Soon," January 29, 1991.

Lambeth, Benjamin S., Operation DESERT STORM and its Meaning. The View from Moscow, The RAND Corporation, Santa Monica, 1992.

Mitcham, Samuel W., The Desert Fox in Normandy: Rommel's Defense of Fortress Europe, Praeger Publishers, CT, 1997.

Moore, Molly, Washington Post, "U.S. Jets Hit Iraqi Tank convoy in Sight of Kuwaiti-Saudi Border," January 30, 1991.

Murphy, Caryle and Gugliotta, Guy, Washington Post, "Saudi Town Reclaimed; Trapped Marines Freed," February 1, 1991.

Neikirk, William, Chicago Tribune, "Baghdad's Strategy: Take the Punches," January 27, 1991.

New York Times, "Allies Aided By Weather, Intensify Bombing Of Iraq; Hussein Restates Defiance," January 25, 1991.

Night Combat, Department of the Army Pamphlet No. 20-236, Department of the Army, June 1953.

Field Manual 100-5, Operations, Headquarters, Department of the Army, Washington DC, 1993.

Parker, Danny S., To Win The Winter Sky: Air War over the Ardennes, 1944-1945, Combined Books, PA, 1994.

Scales, Robert H., Jr., Brigadier General, USA, Certain Victory, Office of the Chief Of Staff, United States Army, Washington DC, 1993.

Schwarzkopf, H. Norman, General (Ret), USA, with Peter Petre, It Doesn't Take A Hero, Linda Grey Bantam Books, New York, 1992.

bin Sultan, Khaled HRH General, Desert Warrior, HarperCollins, New York, 1993.

Williamson, Murray, Air War in the Persian Gulf, Nautical & Aviation Publishing, Baltimore, 1994.

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